Evaluation of performance and weed management of upland DSR production under light irrigation condition in Chuka, Kenya

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PROJECT TITLE

- Seed Equal WP1-Delivering genetic gains to farmers' field

Introductions

- **Experiment 1:**
- To determine the most suitable DSR variety for Chuka area and its environs.

- **Experiment 2:**
- To demonstrate the economic benefits of integrated weed management (IWM) as compared to manual weed options under direct seeded rice and determine economic benefit of IWM

Land preparation, Crop establishment and Water management:

- Land preparation began 28th May to 1st June 2024 which included three days of dry plowing and two for harrowing to fine soil particles/ fine tilt.
- The trial soil test was done by sampling (at 15 - 20 cm deep) in all the plots to create a composite sample which was taken to the lab for testing.
- The field was kept moist by light irrigation for two days i.e. 2nd and 3rd June 2024.
- Planting rows measuring 25 cm apart 4 cm deep were prepared and seed sowed by dribbling at the rate of 100g per 5*5m plot.
- The field was maintained moist by applying light irrigation keeping the soil water potential below -kPA.

Research Design

- **Experiment 1:**

Randomized complete Block Design with 3 replicates

- **Varieties:** IR 05N221 (Komboka), NERICA 4, LF11, IR16L1419, IR15L1361

- **Experiment 2:**

Randomized complete Block Design with 3 replicates

Varieties: 08FAN10

***Plot size. 5m * 5m with row to row spacing of 25cm (20Rows).

Weed management

Experiment 1

- In experiment 1, Weeding was conducted on 20/6/2024, 9/7/2024, 5/8/2024 manually

Experiment 2

- ***Treatment (1)***

a. Twigamethalin 500g/l applied at 3 DAS (7.5ml per 2 litres).
b. Pirata applied at 20 days after sowing (6.25ml in 2 litres)
c. Hand-weeding 15 days after post emergence herbicide application
d. Hand weeding

Weed management cont’

Treatment (2)

- Weed free treatment- When the weed ground cover is between 20-30% of the ground cover

Treatment (3)

- Weedy plot (Control)

Fertilizer Application:

- Fertilizer treatments were applied on 26/6/2024 and [7kgs 24%N, 10kgs Urea 46%N]. and on 9/8/2024, 14kgs 24%N,

FERTILIZER APPLICATION

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Data Collection

1. Data collected :

- Growth data 28DAS (Plant height (cm)
- Weed cover below and above crop canopy
- Phytotoxicity 35 DAS
- Growth data 53DAS, 71DAS
- Initial head data collection 76DAS
- Weed and crop Biomass
- Labor cost associated with weeding in each of the plots

2. Data to be collected :

- 50% flowering – 83DAS Not yet collected
- Yield and yield components per plot (collected at the end of the growing season)

Challenges

- **Birds:** Attack by birds at the seedling stage .Mitigation measures included hiring casuals for birds scaring

- **Residual effect of post emergence herbicide:** Yellowing of the plants due to the residual effect after the application of the post emergence herbicide.

Field Photos


Land Preparation


Water level maintenance


Planting


Planting


1st Weeding


2nd Weeding

Field Photos


Pre-emergence herbicide


Post emergence herbicide


Fertilizer application


Quadrant installation

Field Photos

Field Photos

Conclusion and Recommendation

- Rice production in the dry-land environment in Chuka area is feasible with light irrigation
- Rainfed Variety testing for optimal productivity
- Advocacy and farmer adoption is recommendable

THANK YOU